[redacted]

28 August 1950

STAT

Informal Report of trip to [redacted] Los Angeles, Calif., in connection with Contract RD-13

STAT

1. The writer visited [redacted], on August 7 & 8, 1950, in connection with Project No. 2028, Contract RD-13, Miniature Internal Combustion Engine Generator.

STAT
STAT

2. The primary purpose of this visit was to check on the status of the first phase of said project, i.e. the preparation of a paper design. A secondary purpose of the visit was to collect all available information and samples, if practicable, of the improved model of Radio Set RT-159/URC-4, Air-Sea Rescue Unit. And finally, this writer endeavored to soak up any and all readily available technical information which might be of use to this agency.

3. The writer was cordially received at the main plant of [redacted] on Monday, August 7, 1950, by [redacted] assistant to [redacted], Sales Manager. A "Cook's Tour" of the main plant was very interesting and informative as to the caliber of [redacted] organization. At present a full line of standard television receivers is being manufactured on a production line basis. One interesting feature of the [redacted] T-V Receiver is the "Silver Circle". The tuned circuits in the front end are fabricated by means of a successful printed circuit technique. The inductances are deposited first in copper, then silver, on a paper base phenolic sheet.

STA 25X1
STAT
25X1
STAT

4. Also of interest was the following:

a. The "Radicaster", a portable Geiger counter being manufactured in limited quantities for the U. S. Navy.

b. The AN/URA-8A Frequency Shift Converter and Comparator, a pre-production model only. This equipment is used in diversity reception of frequency shift signals. It consists of two identical converters feeding into a single comparator which automatically selects the

[redacted]

28 August 1950 STAT

Informal Report of trip to [redacted], Los Angeles, Calif., STAT
in connection with Contract RD-13

stronger of the two signals. The equipment was mounted in three 5-1/4" x 19" rack panels and was approximately 18" deep. Extreme ease of servicing was a major feature, sub-units having plug-in connections and mounting with four captive screws.

c. The so-called URC-"point 5" is a miniature transmitter-receiver in a package the size of a pack of Pall Mall cigarettes plus a battery pack of equivalent size. The "point 5" is a crystal-controlled, single-channel, A.M. transmitter and a Super-regenerative receiver (no R. F. stage, therefore, much radiation in receive position), using a built-in combination microphone-speaker as in the AN/URC-4. The transmitter power output was 100 milliwatts, same as the AN/URC-4! The unit shown was a laboratory model and was in process of partial redesign, therefore was not demonstrated in operation. However, the writer was impressed with the possibilities for using the unit within this agency, and asked [redacted] to request [redacted] SSTAT project engineer and designer of the unit, to submit to this agency the necessary security clearance questionnaire forms for himself. It is recommended that this agency investigate thoroughly the potentialities of the URC-"point 5".

d. The improved model of Radio Set AN/URC-4 has a much better antenna system and greater power output. The new antenna is a modified dipole which effectively eliminates detuning effects of the battery cable on the older model. The case of the newer model is approximately 1/2" thicker to allow stowage of the folded antenna. Its output is now 100 milliwatts, considerably higher than the older model. The battery used is same type as older model but will be a maximum of 3/8" higher. The battery life under maximum drain conditions, and using a cycle of 5 minutes transmit followed by 5 minutes receive, will be 28 hours.

[redacted] STAT

28 August 1950

Informal Report of trip to [redacted], Los Angeles, Calif., STAT
in connection with Contract NO-13

Under minimum drain conditions, battery life is 40 hours. Production of the AN/URC-4 has been delayed because of a shortage of coil forms and powdered iron cores. As a result, the [redacted] STAT was unable to release any units to this agency for tests at this time. However, a production rate of 500 per month is scheduled for the very near future. Attached to this report are a copy of each preliminary operating instructions and schematic circuit diagram of the improved model of Radio Set AN/URC-4.

e. Also being built for the Navy was the Direction Finder AN/APA-17A which gives an azimuthal presentation of the received signal on a cathode ray tube.

5. By the time our "quickie Cook's Tour" was complete, arrangements had been made to visit [redacted], STAT
[redacted], Santa Monica, Calif., wher[redacted], STAT
a consultant mechanical engineer for [redacted] was developing the STAT
paper model of the Miniature Internal Combustion Engine Generator.

6. [redacted] has surveyed the field of two-cycle engine STAT
types and found that the most efficient engine was the little known "Puch". This engine has been used in the Austrian built Puch motor cycle for some twenty-odd years, during which time this writer must confess his complete ignorance of its existence. The Puch engine is unique in that it uses a "double single" cylinder with a common combustion chamber. The two cylinders lie side by side and parallel, and use a forked connecting rod which mates with a single crank on the shaft. The little end connecting rod bearings in the original Puch were elongated slightly, scotch yoke fashion, to compensate for the changes in angularity between the two forks. The intake port is in one cylinder while the exhaust port is in the other, thus giving a uni-directional flow of gases and minimizing dilution of the incoming mixture. The chief effect of the forked connecting rod is to give an unusually good port timing, the main reason for the high overall efficiency. Later models of the Puch motor cycle used a connecting rod having only

[redacted]

28 August 1950 STAT

Informal Report of trip to [redacted], Los Angeles, Calif., STAT
in connection with Contract NO-13

one elongated little end bearing, while the latest model uses a master rod and articulated rod assembly, and ordinary circular bearings in the little ends. This latest type rod assembly is used in [redacted] design. STAT

7. To date, [redacted] has concentrated on the engine design, STAT since the alternator design is more or less cut and dried. At the time of this writer's visit, the design layout, stress calculations of rotating and reciprocating parts, etc. was approximately 75% to 80% complete. One exception to this was the ignition system. This writer inspected a sample magneto, built by Smith, well-known West Coast ignition expert. An excellent magneto, it was, however, larger than the engine! An ignition system which takes an A.C. voltage from the alternator, rectifies it, then through a filter system and an ordinary high tension coil with its associated breaker points, has been considered. This system, however, almost certainly would introduce a great amount of conducted noise into the alternator output. The consensus of opinion was to explore fully the magneto system before investigating the second type mentioned above.

8. Another engine design feature is a blower impeller having radial blades similar to those in an airplane engine supercharger.

9. [redacted] has also prepared valve-timing charts and STAT cross-sectional diagrams of the engine during various stages in the cycle of operations. A list of countries of the world together with the octane rating of the gasoline normally available therein, has been compiled. These items, together with other pertinent information are included in [redacted] Progress STAT Report No. 1, covering the period ending July 31, 1950. This report, together with a letter of transmittal from [redacted] STAT Corp., the writer personally delivered to the office of [redacted] STAT [redacted] of this agency, on August 11, 1950. STAT

[redacted]

28 August 1950 STAT

Informal Report of trip to [redacted], Los Angeles, Calif., STAT
in connection with Contract RD-13

10. [redacted] was asked the possibilities of speeding up the STAT
design and later, production model of the miniature generator. At present, he can easily use two more junior engineers on the paper design and thereby speed up development by approximately one-third. However, since this would upset [redacted] budget, STAT
renegotiations would undoubtedly be required.

11. This writer, having been unable to obtain return plane reservations earlier than Thursday, 10 August 1950, spent most of Wednesday tracking down available information on the Puch type engine.

12. "Two-Stroke Motor Cycles" published by Iliffe & Sons, Ltd., London, for the staff of "The Motor Cycle", a British magazine, contains one section figure of the Puch motor cycle. This figure gives three views showing the cycle of operations. A reproduction of this view is herewith attached.

13. The writer finally located a dealer who is the distributor for 13 Western states of the Puch motor-cycle. At his showroom the writer inspected a brand new 250 cc. displacement Puch, also a cylinder block and crankshaft-connecting rod assembly for a 125 cc. displacement model of the Puch. One of the salesmen was very courteous in demonstrating and in answering the writer's questions. The 250 cc. model on the floor was very cleanly built, showing evidences of European craftsmanship. The salesman had driven the machine several times, and flatly stated that it would out-perform any other known two-cycle machine of comparable displacement. This was not all just "sales talk", since his agency handled several other makes of domestic and foreign motor cycles. His one small complaint was that the back portion of the rear cylinder had a tendency to develop a slight hotspot during hard driving. This is undoubtedly because of the absence of any sort of fin-hugging baffle plates to guide the flow of cooling air past the fins properly.

[redacted]

28 August 1950 STAT

Informal Report of trip to [redacted], Los Angeles, Calif., STAT
in connection with Contract RD-13

14. Attached is a reproduction of an advertisement from this dealer which was run in the July, 1950, issue of "Cycle", a Los Angeles motor cycle publication.

W. W. Woodard

Enc.: 1. Preliminary Operating Instructions for Radio Set AN/URC-4
2. [redacted] Dwg. No. D1-66, "Plate-Schematic Diagram" RT-169/URC-4 STAT
3. Reproduction of Fig. 67 from "Two Stroke Motor Cycles"
4. Reproduction of advertisement in July, 1950, "Cycle"

ELM/WWW/cd